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EXAMINER

BLAU, STEPHEN LUTHER

ART UNIT PAPER NUMBER

3711

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/736,975

Applicant(s)

YAMADA, MEGUMI

Examiner

Stephen L. Blau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-13 and 19-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-13 and 19-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 19-20, 24-34, 38-40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preece in view of Hsu.

Preece discloses a first layer of metal containing prepreg wrapped at butt of a shaft (Col. 3, Lns. 39-47, Ref. No. 10), a layer of non-metal fiber prepreg wrapped adjacent to a first layer of metal-containing prepreg throughout a length of a shaft (Ref. No. 11, Col. 3, Lns. 29-38), a layer of metal-containing prepreg being an inner most layer (Claim 1), a layer of non-metal fiber prepreg being wrapped over the inner most layer (Figs. 1A-1B), a metal having a specific mass greater than 7 g/cm³ in the form of copper (Col. 3, Lns. 39-45), a metal powder (Col. 3, Lns. 39-47) dispersed (Col. 4, Lns. 60-67) in a synthetic resin, and an epoxy resin (Col. 4, Lns. 33-40), an inner-most layer of metal-containing prepreg sheet (Col. 3, Lns. 39-47) is located along a length of a shaft between at butt end of the shaft and 40 % of an overall length of a shaft in the form of about 25-30 % of the defined length of the shaft (Fig. 1A), the dimensions and location of one or more plies of leaded film may be used to define and /or adjust in part

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the overall weight, swing weight and balance point of the shaft (Col. 2, Lns. 23-34), multiple layers used in forming a shaft (Ref. Nos. 18, 20, and 22) and conventional means of weighting pre-preg uses tungsten powder (Col. 1, Lns. 49-60). An artisan skilled in the art of forming shafts with sufficient weighting and strength would have selected a suitable number of metal-containing prepreg layers in which a second layer is included.

Preece lacks a layer of metal containing prepreg wrapped at a tip of a shaft, an inner-most layer of metal-containing prepreg is located along a length of a shaft between at tip end of the shaft and 40 % of an overall length of a shaft, the layer of metal-containing prepreg being a metal fiber, and a Tungsten powder.

Hsu discloses adding a weighted segment at a tip end of a shaft for lowering the position of the center of gravity of a shaft (Abstract), longitudinal filaments for reinforcement (24) and using metal filaments to weight a tip end of a shaft (Col. 1, Lns. 56-66). In view of the patent of Hsu it would have been obvious to modify the shaft of Preece to have a layer of metal containing prepreg wrapped at a tip of a shaft and an inner-most layer of metal-containing prepreg is located along a length of a shaft between a tip end of the shaft and 40 % of an overall length of a shaft instead of at the butt end of a shaft in order to lower the center of gravity of a shaft and as such place more mass near the point of impact between a head and a ball maximizing the transfer of energy to a ball. In addition, in view of the patent of Hsu it would have been obvious to modify the shaft of Preece to have fibers instead of powders to add not only weight but also strength to a tip end of a shaft.

It would have been obvious to modify the shaft of Preece to have a second layer of metal-containing prepreg in order to have additional strength and weight at a tip end of a shaft.

It would have been obvious to modify the shaft of Preece to have a metal powder being tungsten to add more weight to a tip end of the shaft for the same volume of material added.

3. Claims 1, 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable under Kusumoto (6,306,047) in view of Hsu, and Honma.

Kusumoto discloses a mandrel having a tip surface being recessed relative to a body surface of the main body of the mandrel (Fig. 1) a shaft having a generally constant taper throughout the length of a shaft, a first layer (3) of prepreg wrapped at a tip (Fig. 6), a layer of non-metal fiber prepreg (5) wrapped adjacent to a first layer (Fig. 6), and a second layer prepreg (7') wrapped adjacent to the layer of non-metal fiber (Fig. 6). Kusumoto does not specifically state a layer overlaying an innermost tip reinforcing layer would have a generally non-inflected inner surface throughout the length of the shaft however clearly an artisan skilled in the art of shaping a mandrel to effect the shape of the outer layers with an inner layer which is only along a portion of a shaft would have shaped a mandrel at a portion where an inner layer is located to shape an outer layer in which an adjacent outer layer has a generally non-inflected inner surface throughout the length of the shaft is included.

Kusumoto lacks a first layer containing metal fibers, a non-metal fiber prepreg forming a generally non-inflected inner surface throughout the length of the shaft, and a second layer of metal-containing prepreg wrapped adjacent to a layer of non-metal fiber.

Hsu discloses adding a weighted segment at a tip end of a shaft for lowering the position of the center of gravity of a shaft (Abstract), longitudinal fibers in the form of filaments for reinforcement (24) and using metal filaments to weight a tip end of a shaft (Col. 1, Lns. 56-66). In view of the patent of Hsu it would have been obvious to modify the shaft of Kusumoto to have a layer of metal fibers containing prepreg wrapped at a tip of a shaft in order to lower the center of gravity of a shaft as well as providing reinforcement. As such more mass would be placed near the point of impact between a head and a ball maximizing the transfer of energy to a ball.

Honma discloses layers of prepreg containing a metalloid in the form of boron (Ref. Nos. 7 and 11) which are separated by a prepreg sheet which does not contain a metalloid fiber (Ref. No. 9) in order to have a shaft which can exhibit good vibration characteristics (Abstract). In view of the patent of Honma it would have been obvious to modify the shaft of Kusumoto to have a second layer of metal-containing prepreg wrapped adjacent to a layer of non-metal fiber in order to add weight to a shaft and in order to develop a shaft with a specific vibration characteristic and flexibility taking advantage of the characteristics of a metal fiber.

It would have been obvious to modify the shaft of Kusumoto to have mandrel with a recess at tip end and a non-metal fiber prepreg forming a generally non-inflected inner

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surface throughout the length of the shaft in order to form an outer surface of a shaft that has a generally constant taper throughout the length of a shaft.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusumoto (6,306,047) in view of Hsu, and Honma as applied to claims 1, 6-8, and 10 above, and further in view of Takemura.

Kusumoto lacks a shaft having a mass of about 80-130 grams. Takemura discloses a composite shaft having a weight of 80-85 grams (Col. 9, Lns. 10-17). In view of the patent of Takemura it would have been obvious to modify the shaft of Kusumoto to have a shaft weight of 80-85 grams in order to have a swing weight for a specific player's strength which will minimize fatigue while playing a round of golf yet maximize the amount of energy transferred to a ball at impact.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusumoto (6,306,047) in view of Hsu, and Honma as applied to claims 1, 6-8, and 10 above, and further in view of Lezatte.

Preece lacks a center of mass located 45-51 % when measured from a tip end. Lezatte discloses a center of mass located 45-51% when measured from a tip end (Col. 3, Lns. 30-38). In view of the patent of Lezatte it would have been obvious to modify the shaft of Preece to have a center of mass located 45-51% when measure from a tip end in order to have a shaft with a specific swing weight which fits the strength of a golfer.

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6. Claims 1, 9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable under Preece in view of Hsu, Kusumoto (6,306,047) and Honma.

Preece discloses a first layer (10), a layer of non-metal fiber prepreg in the form of a subassembly (11-12), and a second layer in the form of a subassembly (13-14) containing prepreg wrapped adjacent to the layer of non-metal fiber (Fig. 1).

Preece lacks a non-metal fiber prepreg forming a generally non-inflected inner surface throughout the length of the shaft, and a second layer of metal-containing prepreg wrapped adjacent to a layer of non-metal fiber.

Kusumoto discloses a mandrel having a tip surface being recessed relative to a body surface of the main body of the mandrel (Fig. 1) and a shaft having a generally constant taper throughout the length of a shaft. Kusumoto does not specifically state a layer overlaying an innermost tip reinforcing layer would have a generally non-inflected inner surface throughout the length of the shaft however clearly an artisan skilled in the art of shaping a mandrel to effect the shape of the outer layers with an inner layer which is only along a portion of a shaft would have shaped a mandrel at a portion where an inner layer is located to shape an outer layer in which an adjacent outer layer has a generally non-inflected inner surface throughout the length of the shaft is included. In view of the patent of Kusumoto it would have been obvious to modify the shaft of Preece to have mandrel with a recess at tip end and a non-metal fiber prepreg forming a generally non-inflected inner surface throughout the length of the shaft in order to form an outer surface of a shaft that has a generally constant taper throughout the length of a shaft.

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Honma discloses layers of prepreg containing a metalloid in the form of boron (Ref. Nos. 7 and 11) which are separated by a prepreg sheet which does not contain a metalloid fiber (Ref. No. 9) in order to have a shaft which can exhibit good vibration characteristics (Abstract). In view of the patent of Honma it would have been obvious to modify the shaft of Preece to have a second layer of metal-containing prepreg wrapped adjacent to a layer of non-metal fiber in order to add weight to a shaft and in order to develop a shaft with a specific vibration characteristic and flexibility taking advantage of the characteristics of a metal fiber.

See the paragraph above for elements of structure previously rejected by Preece in view of Hsu.

7. Claims 21 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preece in view of Hsu as applied to claims 14, 19-20, 24-34, 38-40 and 41 above, and further in view of Takemura.

See paragraphs above for elements of structure previously rejected by Preece in view of Takemura.

8. Claims 22 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preece in view of Hsu as applied to claims 14, 19-20, 24-34, 38-40 and 41 above, and further in view of Lezatte.

See paragraphs above for elements of structure previously rejected by Preece in view of Lezatte.

9. Claims 23 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preece in view of Hsu as applied to claims 14, 19-20, 24-34, 38-40 and 41 above, and further in view of Beach.

See paragraphs above for elements of structure previously rejected by Preece in view of Beach.

Response to Arguments

10. The argument that none of the references address adding weight to a tip of a shaft and with the same material reinforcing the tip is disagreed with. Hsu clearly teaches adding weight to a tip (Abstract) in addition to adding reinforcement using filaments which appear to be not be continuous (Fig. 2). Filaments inherently reinforce the matrix they are contained in. Adding reinforcement to tip is very old in the art as shown by Kusumoto (6,306,047) and Preece (13,14). Hsu also discloses how both can be maximized at the butt end buy having metallic continuous fibers (24). An artisan skilled in the art would know that this teaching could be used any place along the shaft. The argument that none of the references use metal containing prepreg as structural reinforcement but only as weighting mechanisms is disagreed with. Hsu the metal fibers along the butt section will inherently provide both structural reinforcement and weight and one skilled in the art would recognize this. The argument that Preece teaches away from reinforcing or weighting at the tip is disagreed with. Preece states

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(Col. 2, Lns. 23-29) that location of one or more plies of loaded film may be used to define and/or adjust in part the overall weight, swing weight and balance point of the shaft. This statement leads one skilled in the art to know that the loaded film could be repositioned such as to the tip end to achieve a desired weight distribution for a shaft. With respect to claim 33, the argument that none of the references cited for this claim anywhere specifically disclose an innermost layer at a tip is agreed with. However it would be obvious to one skilled in the art knowing the teachings of Preece and Hsu. Preece discloses that the inner layer can be located to achieve a balance point of a shaft. Hsu discloses the motivation to locate the inner layer at a tip end which is to lower the center of gravity.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Blau whose telephone number is (703) 308-2712. The examiner is available Monday through Friday from 8 a.m. to 4:30 p.m.. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0858. (TC 3700 Official Fax 703-872-9306)

Slb/ 16 October 2003


STEPHEN BLAU
PRIMARY EXAMINER